

Improving nursing care for elderly patients with diabetes

A literature review

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<p>Abstract</p> <p>As one of the common chronic diseases, diabetes not only occurs in middle age, but also the incidence of diabetes is increasing gradually. At the same time, elderly patients with diabetes are more likely to suffer from a series of complications because of the lack of relevant nursing knowledge of health care workers. So exploring what nurses can do to improve nursing care for elderly people with diabetes is extremely important.</p> <p>The aim of this study is to put together information on nursing intervention for elderly people with diabetes base on already existing literature. The purpose is to provide useful and clear information for nurses who take care of elderly people with diabetes.</p> <p>The study was conducted as a literature review and the data was collected using two databases: CINAHL and Academic Search Elite. The results was analyzed by using inductive content analysis method from eight articles. The results were divided into five categories: 1. the need for knowledge and information about diabetes for nurses, 2. teamwork among nurses, 3. the need to promote patient's self-care, 4. regular examinations and care of elderly patients with diabetes.</p> <p>In conclusion, there are may things that nurses and patients themselves can do to prevent diabetes from getting worse. However, it's difficult for nurses to take good care of every patient. For further research, we recommend that conducting research about psychological problems associated with elderly people with diabetes</p>		
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1 Introduction

Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys, and nerves. The most common is type 2 diabetes, usually in adults, which occurs when the body becomes resistant to insulin or does not make enough insulin. Acute complications include diabetic ketoacidosis and hyperosmotic hyperglycemia non-ketoacidosis. Long-term complications include cardiovascular disease, chronic kidney disease and diabetic foot. (World Health Organization [WHO], 2016).

According to the WHO (2016), the number of people living with diabetes all over the world rose from 124 million in 1997 to 422 million in 2014. For elderly people, the physical and psychological deterioration because of aging makes the condition of elderly diabetics more complicated and difficult to treat than that of young and middle-aged diabetics. Therefore, it is necessary to understand the characteristics of elderly diabetes in order to prevent and treat it reasonably.

An existing review of the literature, Lucas (2013) provided evident that there a need for district nurses to provide social connection for older people with type 2 diabetes mellitus. The author further provided evidence that having district nurses specialized in providing clients with diabetes is important and such nurses are of fundamental importance for the treatment of diabetes. Now the relationship between diabetes and health is widely recognized and nursing intervention have been improved step by step, but because of aging of population, there are more and more elderly people with diabetes. Therefore this study is to provide useful and clear information on how nurses can improve nursing care for elderly people with diabetes.

2 Diabetes among the elderly

2.1 Epidemiology of diabetes

Diabetes is a public health problem that affects people's daily life. In China, for instance, men have a higher prevalence than women age among 20-60. People who live in urban have higher risk having diabetes than those who live in rural area (Yang 2010). According to the WHO (2018), with the development of society, diabetes is no longer a disease that occurs in high-income country, it's also becoming more common in developed country. The reason why it is more common is not just because the world's population is getting older, but also, not enough medical care and lack of financial support for those with diabetes. People who have diabetes spend lots of money on insulin; it is a big burden for low-income families.

Furthermore, diabetes relates to personal lifestyle. For example, in the early stage of diabetes, it called prediabetes. Prediabetes is a serious health situation in which person's levels of blood glucose are higher than normal, but not high enough to be defined as diabetes. Without weight loss (for those who need it), healthy eating, and moderate physical activity, many people living with prediabetes will go on to develop type 2 diabetes (Tuso 2014). In view of this situation, nurses should not only improve the medical aspects, such as using more advanced technologies to prevent diabetes, but also give patients enough education about prevention of diabetes. Patients should know what is diabetes and what is the classification of diabetes (Tuso 2014).

2.2 Types of diabetes

Diabetes is mainly divided into type 1 (T1D), type 2 (T2D) and gestational diabetes (GDM). According to WHO (2018), "Type 1 diabetes (previously known as insulin-dependent, juvenile or childhood-onset) is characterized by deficient insulin production and requires daily administration of insulin. The cause of type 1 diabetes is not known and it is not preventable with current knowledge. Symptoms include excessive excretion of urine (polyuria), thirst (polydipsia), constant hunger, weight

loss, vision changes, and fatigue. These symptoms may occur suddenly.” Gestational diabetes, occurs only when prepregnancy glucose metabolism is normal or potentially impaired. Patients are more likely to develop diabetes in the future and have an impact on the fetus. One of the most common diabetes is T2D. T2D used to be called non-insulin dependent diabetes mellitus, accounting for about 90% of the total number of diabetes patients, the age of onset is more than 35 years old. Sixty percent of patients with T2D were overweight or obese. According to WHO (2016), “Type 2 diabetes has obvious familial inheritance and is not associated with the autoresponse. There are no islet cell antibodies or insulin autoantibodies in the serum. Symptoms may be similar to those of type 1 diabetes, but are often less marked or absent.” “The risk of T2D is determined by an interplay of genetic and metabolic factors.” According to the report, Ethnicity, family history, previous gestational diabetes, old age, overweight and obesity are common risk factors. And unhealthy diet, lack of physical activities and smoking can increase risk (WHO, 2016).

2.3 Complications of elderly patients with diabetes

Compared patients with no diabetes, elderly diabetes patients have a higher proportion of premature death and disability and co-existing disease such as hypertension, coronary heart disease and stroke etc. They also have a high risk of common elderly syndrome, such as compound medicine, cognitive impairment, urinary incontinence.

For elderly patients, hypoglycemia is a serious complication. If the old people with diabetes have hypoglycemia, this shows they control their blood glucose in a wrong way and they have a higher risk than the young. It indicates that the failure of self-management and control in diabetics. So the old people need more nursing intervention than the young and the nurses should become more comprehensive.

The symptoms of hypoglycemia include sweat, pale skin, drowsiness, headache, dizziness, the difficulties in vision and speech, forgetful consciousness, etc. It occurs in order adults for a number of reasons, including insulin deficiency and progressive renal insufficiency. Also it has risk of falling for patients. And elderly patients with

diabetes are susceptible to have cognitive decline for unknown reasons, which is a risk factor when patients have hypoglycemia.

Patients who have cognitive impairment, they show mild amnesia and even marked dementia, which makes it difficult for them to complete complex self-care, like glucose monitoring and insulin dose adjustment. It also affects them to determine when and what to eat. So they should be tested for cognitive status with MMSE(Mini Mental State Examination), which has been regarded as a reliable and accurate method to detect cognitive impairment (Hiltunen et al., 2001). It is helpful for the neuropsychological evaluation of patients.

The most common treatment for diabetes is insulin treatment. Give patients appropriate insulin according to doctor's advice. Besides, patients should follow a strict diabetic diet, they can control their weight, by follow the high-protein, low-carbohydrate and energy-restricted diet (Hamdy 2012). According to the Brazilian Diabetes Society (2011), treatment of DM (Diabetes Mellitus) is: education to patients, stop smoking, increase mild exercise, drug treatment. Due to the prognostic characteristics trait, oral antidiabetic drugs and insulin have been used for many years (Becker et al., 2012). And try to prevent skin infection. If diabetes can not be controlled well, there will be some complications, for example, "Diabetic complications may cause heart attack, stroke, blindness, renal failure, and lower limb amputation which have deadly consequences." (Feng et al., 2018). Some of complications maybe fatal.

Patients with diabetes foot should have their feet and shoes checked regularly (Smanioto et al., 2014). Also keep the blood glucose in a normal level is the ultimate approach to prevent this disease. For patients who have diabetic nephropathy, they should limit intake of salt, sugar and protein. Keep regular diet and avoid nephrotoxicity food and medicine. (Yang et al., 2017)

2.4 Elderly patients with diabetes

From a research, we can tell that the prevalence of diabetes among the elderly has increased significantly. In the United States, prevalence of men that are over 65 is 6.9 percent and women that are over 65 is 8.9 percent (John et al., 1987). The reason why the increasing number of elderly people with diabetes is various. One is about the nursing home. According to the latest statistics, the CDC (Center for Disease Control) says there are 15,600 nursing homes in the United States, housing 1.4 million Long-Term Care (LTC) residents. And 25-34% of this population has diabetes, and experts agree that this will continue to grow in the future.

In a series of residents in nursing home not known to have diabetes, a large proportion of residents did not detect diabetes within 2 hours of having glucose. Maybe they have a high risk of cardiovascular (Sinclair et al., 2001). “Allowing for subjects who refused or were unable to participate, the calculated total prevalence (which includes known and newly detected diabetes) was 26.7% (95% CI 21.9-32.0). The calculated overall prevalence of impaired glucose tolerance was 30.2% (25.2-35.6).” (Sinclair et al., 2001). It was estimated that 14.5% of nursing home residents had diabetes in the U.S., and 75% of the inhabitants were 74 years of age or older. (Sinclair et al., 2001).

The elderly patients with diabetes in nursing home have a higher rate to have diabetes complications than those diabetic patients who stay in the hospital. The main cause for that is lack of professional nursing intervention. Patients who are in the nursing home can not be checked regularly, which causes pressure ulcers infection or serious problems. For example, The England-wide Care Home Diabetes Audit, showed older people with diabetes who live in nursing homes are not monitored the blood glucose levels and not receiving specific care. And one reason is that the education of nurses is not accordant (Anderson 2014).

2.5 Nursing intervention for elderly patients with diabetes

In 2010, Diabetes UK published a document about carrying out special care plans, check-up for diabetes on admission and specific training for all care staff to reduce the number of hospital admissions (Gregory 2018). This suggests that care home staff knowledge was also poor. This document also showed that about two thirds of homes did not have a professional staff to manage blood glucose of elderly patients with diabetes. For nursing home, the individualized therapy is important, so it should be encouraged to develop individualized hypoglycemia prevention and management programs, which needs practical guidance of staff. And The Institute of Diabetes for Older People has appealed to improve nursing care by some strict control and rules in nursing homes (Anderson 2014).

The goal of insulin therapy is to maximize the function of drugs to patients before the onset of diabetes. It is necessary to learn how to use insulin, because the type, the dose, the concentration, the location of injection, the technology of injection and other factors of insulin are directly related to the effects (Becker et al., 2012). In Brazil, a research showed a growing concern with errors related to its application of insulin at home. About 94.6% disposable syringe and needle were reused after use. Elderly patients have little education about the use of insulin, so it is necessary to educate them know more about it, because another study found that 64.7% of people had complications after using insulin (Becker et al., 2012). These are related to inadequate insulin administration technique. In this literature, the nursing intervention for people with diabetes is still not sound in Brazil. In some ways, the care quality for people with DM(Diabetes Mellitus) is still poor all over the world. The reason is that the lack of basic skills for insulin administration. So nurses should help patients to know more about technical skills through educational intervention. It is necessary for elderly patients with diabetes to give insulin by themselves in home. The more patients know, the fewer mistakes there will be.

The nursing of elderly diabetic patients is very complicated, the clinical and functional manifestations are heterogeneous. Some elderly patients may be diagnosed with diabetes early and have serious complications. Others may not be diagnosed with

diabetes early enough to be rediagnosed with complications. Some patients are newly diagnosed with diabetes without complications. So there are different nursing intervention for different patients.

For those elderly patients who have good function of body, they can benefit from long-term rigorous diabetes management. So their treatment strategies and goals are similar to those younger patients. Patients with advanced complications, cognitive or functional disorders, nurses can relax the requirement of controlling blood sugar appropriately, because they can not benefit from the reduced risk of microvascular complications, on the contrary, it will produce adverse outcomes, such as hypoglycemia. However, patients with poor blood sugar control may be associated with acute complications, including dehydration, poor wound healing, and hypertonic hyperglycemic coma. Therefore, the goal of blood sugar control should at least avoid these adverse events.

3 Aim, purpose and research question

The aim is to put together information on nursing intervention for elderly people with diabetes base on already existing literature. The purpose is to provide useful and clear information for nurses who take care of elderly people with diabetes. The research question is: what can nurses do to improve nursing care for elderly people with diabetes?

4 Methodology

4.1 Literature Review

Literature review is a kind of comprehensive research. It extensively read, analyze and sort out the literature in research field involves in the topic selection, and then put forward our own opinions and ideas. From the literature review, we can identify, summarize, and evaluate the ideas and information of other authors in a filed from our point of view. The purpose of the literature review is not repeat other authors' views and opinions. Rather, it need to identify something that is unknown (Lingard 2017). The literature review is important because it helps synthesis different views of other researchers and minimize unnecessary new studies..

4.2 Literature search:

The data were selected from the academic databases of CINAHL, Pubmed, and Google Scholar. The key words are diabetes AND elderly people AND nursing intervention. The table shows the database, the key terms, the results and the relevant studies of the search. After finding the research, we selected the articles by reading the title and abstract. The inclusion criteria for this literature review data will be:

Study in English

Published between years 2010 and 2018

Full text access

Studies the nursing intervention for elderly people with diabetes in any health care unit

TABLE 1: Results of the literature search

Database	Key terms	Results	Chosen on the basis of title	Chosen on the basis of abstract	Relevant studies
CINAHL	diabetes AND elderly people AND nursing intervention	80	26	18	5
Academic Search Elite	diabetes AND elderly people AND nursing intervention	265	18	8	3

4.3 Data analysis:

The selected data will be analyzed by using content analysis. Content analysis is widely used in qualitative research. It means interpreting meaning from the content of text data. A summative content analysis involves counting and comparisons for key terms and content, and then interpretation for the underlying context. (Hsieh 2005)

When analyzing the data, people often use two approaches of content analysis: inductive content analysis and deductive content analysis. Both inductive and deductive analysis processes are represented as three main phases: preparation, organizing and reporting. Deductive content analysis is useful if the general was tested in previous theories in different circumstances or to compare categories at different times (Elo et al., 2008). Deductive content analysis is an approach where the researchers analyze from general information to something more specific. In this research the deductive content analysis will be used to analyze the data.

The selected articles will be read carefully as much as possible to find more details. And then doing critical appraisal. It is the use of explicit method to assess the data in previous research, applying as evidence. After reading each article, making a list of some information that related to our research question and also make a list of similarities and differences between articles according to the content. And then make different subcategories and different main categories and give them names during clustering phase. Finally, put the similar subcategories into main categories (Dixon-Woods, Agarwal, Jones, Young, Sutton & Noyes 2008, 94).

5. Results

Thematic analysis of the data identified from the eight articles resulted in the following six categories: 1. the need for knowledge and information about diabetes for nurses, 2. teamwork among nurses, 3. the need to promote patient's self-care, 4. regular examinations and care of elderly patients with diabetes.

The need for knowledge and information about diabetes for nurses

The results show that some nurses have difficulty in realizing the symptoms of elderly patients with diabetes. For example, as nurses or health care workers, they must highlight the symptoms of hyperglycemia and hypoglycemia in the future (Smide et al., 2013). It can help them discover elderly diabetic patients with complications as soon as possible. For instance, if the patient wets the bed, it indicates that patient may have high blood sugar (Smide et al., 2014).

Also, some nurses lack knowledge about how to take care of elderly diabetes patients. They need to acquire lots of knowledge, like Graue et al., (2013) mentioned, nurses and nursing assistants should have diabetes-related knowledge and information to impart it to patients, relatives, and colleagues. They will have confidence and autonomy to manage complex patient situations and make care decisions by requiring training (Graue et al., 2013). This kind of regular training can increase their knowledge about the elderly with diabetes (Huber et al., 2008).

When nurses have enough knowledge of elderly patients with diabetes, they would be able to understand the type of diabetes experienced by patients. Furthermore, this can improve the nurse-patient communication about the type of diabetes and better treat the elderly patients as an individual (Wilson 2012). Nurses are also responsible for articulating scientific knowledge and the individual or collective common practice (Smanioto et al., 2014).

Teamwork among nurses, patients and relatives

Sometimes because of the limited resources and energy, it's difficult to take good care of every patient. Nurses and nursing assistants should have good communication and teamwork with general practitioners and get more support from colleagues with specific clinical knowledge of diabetes (Graue et al., 2013). Too much nagging from the old people's family members increased the likelihood of older adults not engaging in exercise self-care management (Dalton & Matteis, 2014).

The need to promote Patients self care

Besides the nurses' help, patients' self-care is also important. With increased age, the sensitivity of activity of the older people gradually decreases. Most elderly patients do less exercise. But, it's reported that remaining active and upholding physical activities enhance chronic conditions (Huber et al., 2008). Nurses should encourage older people with diabetes to do some exercise to prevent some of the complications associated with diabetes. The elderly should pay attention to foot hygiene, nail care and proper footwear, which are crucial to reduce injury and ulcer formation. (Smanioto et al., 2014)

Regular examinations and care of elderly patients with diabetes

Nurses should provide elderly patients with eye examinations at least once a year to prevent the blindness caused by diabetes (Vajen et al., 2012). Regular foot examinations can reduce the risk of foot injury and lower limb amputation (Smanioto et al., 2014).

Nurses should give regular depression screening for elderly diabetic patients and help to enhance self-care activities and physical condition (Kim et al., 2017). Also, people with cognitive impairment and diabetes require a greater level of care (Wilson 2012).

6. Discussion

6.1 Discussion of key findings

According to the result of this study, having enough knowledge related to elderly patients with diabetes is very important for nurses when caring for the patients (Graue et al., 2013). For example, nurses can prevent some complications of patients by observing some symptoms of diabetes. Besides nurses' insufficient knowledge related the symptoms of elderly patients with diabetes, the lacking of knowledge about nursing intervention for the care of elderly with diabetes is also a serious problem. This is one of the reasons why older people with diabetes are prone to having complications. To minimize this problem, nurses should be trained to acquire knowledge, which can help not to only take better care of patients, but increase their understanding of elderly diabetes. Also nurses can manage different and complex situation by having training about how to manage elderly patients with diabetes. This finding is in line with Gregory (2018), who argue that all health care workers should get specific training in order to reduce the number of hospital admissions.

The result also revealed that, in caring for the elderly patients with diabetes, it's very important for nurses to gain support and help from other colleagues (Graue et al., 2013). This can be done through proper communication and a good teamwork. Through proper communication with elderly patient with diabetes, nurses could avoid misunderstanding and identify any possible complication that the patient might have. Sometimes because of the limited medical resources, it is difficult to take good care of every patient. In some developing country, a nurse may have many patients to take care of, which takes a lot of energy. Providing nurses with help can improve work efficiency and reduce the stress among nurses.

The result further showed that older patients with diabetes can prevent the progression of the disease by themselves. Regular exercise can improve the chronic disease condition and reduce occurrence of complications (Huber et al., 2008). Nurses should

therefore encourage older patients with diabetes to do regular exercise. Diabetic foot ulcer is a major complication of the diabetes, it can easily occur because of unhealthy foot hygiene. Nurses must educate elderly patients to pay attention to foot hygiene, nail care and proper footwear to avoid diabetic foot complication. Sometimes nurses may not have enough resources to take good care of every patient, so teaching them to take care of themselves is crucial and good solution to avoid some of these complications.

One finding states that nurses should provide elderly patients with eye examinations at least once a year to prevent blindness caused by diabetes (Vajen et al., 2012). Diabetic cataract and glaucoma are some of the common complications in diabetic patients. Early detection, diagnosis and treatment can be achieved and the rate of eye complications in diabetic elderly people can be reduced. In the same way, Smanioto et al., (2014) suggest that regular examinations can reduce the risk of injury and amputation. Diabetes can cause damage the soft tissues, bones and joints of the foot. If treatment fails to address the symptoms and complications of lower extremities, the consequences can be catastrophic. Therefore, it is of great significance to carry out early examination of foot in patients with diabetes.

In the current study, Kim et al (2017) concluded that nurses should give regular depression screening for elderly diabetic patients to help enhance self-care activities and physical condition. Diabetes is considered as a physical and mental disease, because it is a chronic and long-term disease that cannot be completely cured and reduce the quality of life of patients and aggravate stress and pessimism. Depression can make the treatment of elderly patients become more difficult. Therefore, it is recommended to pay more attention to the assessment and treatment of depression.

Furthermore, the results of this study revealed that, diabetic people with cognitive impairment should require a greater level of care (Wilson 2012). Similarly, Hiltunen et al (2001), argued that diabetic people should be tested for cognitive status with MMSE, which has been regarded as a reliable and accurate method to detect cognitive impairment. Additionally, this study indicate that there is too much misunderstanding among patients and their family members (Dalton 2014). A good relationship between family members and patients is very important. The care and support from family is

fundamental to promote the recovery of patients and facilitate nursing care. Therefore, nurses should encourage family members to have a comfortable atmosphere with patients and understand the elderly patients, and not to stress them. And during daily activities of living, they should not be nagging at the elderly patient.

6.2 Ethical issues, reliability and validity.

Most of the articles used raised ethical issues related to the research. Most the researchers conducted research with informed consent from the participants and got support from different agencies. Only one research did not need the ethical approval, but it was mentioned why it was not needed. Some of studies also discussed about the participants' privacy and guaranteed not to reveal their privacy. Except one research, that did not mention how to deal with the confidentiality of participants.

These research results are relatively reliable. Some of the researches' participants are nurses with over three years working experience, who had taken care of older patients with diabetes. Besides, the nurses who participated in the study had different level of education. The research articles used in this study were also conducted in different countries, which make the research results more comprehensive. Furthermore, some research has huge sample, for example, one research reviewed the chart of 245 patients. However, there were some limitations regarding some of the research samples size, which are relatively small. The results of those articles will be affected by the limited sample size.

This research suggests a number of reliable nursing intervention to help provide a better care for older patients with diabetes, by putting together the results from different studies. This study is also valid because, we got the results we need by using specific keywords in different databases and systematically recording all the stages involved in this research. Although the two databases used for this study, cover a wide field of academic articles in nursing and health sciences, there may be some articles in other databases that related to our research question, which were not found.

6.3 Conclusion and recommendations for further studies

According to the results of this study, there are various intervention to improve the nursing care for elderly patients with diabetes. Nurses, as caregivers to should be required to have sufficient knowledge related to diabetes, which can be obtained through in-service training. They also can get support from colleagues who know more about the diabetes among elderly patients. Self-care of the older patients with diabetes is also important. Elderly patients themselves should do physical exercises to improve their health. Besides, regular examinations can effectively prevent the occurrence of some complications associated with older people with diabetes. Promoting good relations between elderly patients and their family members is also indispensable.

We recommend further studies to be conducted about psychological problems of elderly people with diabetes. Nursing care of psychological problems for elderly people with diabetes is necessary to ensure the proper care and beneficial care. In addition, elderly people with diabetes have a high risk of hypoglycemia. Once hypoglycemia is confirmed in patients, the emergency nursing treatments should be followed as soon as possible. So further studies about emergency nursing treatments of elderly people with diabetes could be conducted.

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Appendix 1: Summary of the articles that met the inclusion criteria of this study

Author/s , year, country	Purposes	Participant s	Key findings
Graue et al,2013, Norway	To explore the experiences and clinical challenges that nurses and nursing assistants face when providing high-quality diabetes-specific care for elderly people with diabetes.	16 registered nurses and 4 nursing assistants	1.Nurses and nursing assistants should have diabetes-related knowledge and information and impart it to patients, relatives, and colleagues. 2.Nurses and nursing assistants should have good team communication and teamwork with general practitioners and get more support from colleagues with specific clinical knowledge of diabetes. 3.Nurses and nursing assistants should require training to have confidence and autonomy to manage complex patient situations and make care decisions.
Smide& Nygren, 2013,Sweden	To determine the level of knowledge of health workers about elderly patients with diabetes.	10 health care workers	Health care workers must highlight the symptoms of hyperglycemia and hypoglycemia in the future.For example,if the patients wets the bed,it indicates that patient may have high blood sugar.
Huber et al,2008, Switzerland and	To explore nurses perspectives on diabetes care in nursing homes and home care services.To describe the level of diabetes care in nowadays.	23 nurses	Regular nurse training can increase their knowledge about the elderly with diabetes.Remaining active and upholding physical activities enhance chronic conditions.
Vajen et al,2012, The United States	To compare the management of diabetes mellitus in residents of extended-care facilities with American Diabetes Association standard of care for ambulatory adults.	245 patients	We should provide elderly patients with eye examinations at least once a year to prevent the blindness caused by diabetes.Treating hyperlipidemia can produce a mortality benefit within 2 to 4 years,whereas aggressive glucose management takes approximately 8 years.

Smaniot o et al,2014, Brazil	To analyze the implications of self-care on the risk factors of ulceration in the feet of patients with diabetes,related to dermatology,orthopedic,neurological and vascular alterations.	300 people	Regular foot examinations can reduce the risk of foot injury and lower limb amputation.Foot hygiene,nail care and proper footwear are crucial to reduce injury and ulcer formation.Nurses are responsible for articulating scientific knowledge and the individual or collective common practice.
Dalton& Matteis, 2014,Th e United States	To study the effects of family relationship and support on self-care activities in elderly patients with diabetes.	16 diabetic older adults	Too much nagging from the old people's family members increased the likelihood of older adults not engaging in exercise self-care management.
Wilson, 2012,the United Kingdo m	To explore the views of older people with type 1 or type 2 diabetes on the care they received from healthcare professionals.	25 people aged between 72 and 84 with either type 1 or type 2 diabetes	Healthcare professionals should understand the type of diabetes experienced by patients, improve the poor communication about the type of diabetes and treat patients like an individual. People with cognitive impairment and diabetes require a greater level of care.
Kim, H, et al, 2017, Korea	To identify the factors affecting health-related quality of life in elderly Korean patients with diabetes.	65 elderly patients with diabetes who were treated in a general hospital in Korea.	Nurses should give regular depression screening for elderly diabetic patients and help to enhance self-care activities and physical condition.